McGill | Engine

6TH ANNUAL CELEBRATION OF INNOVATION & ENTREPRENEURSHIP

McGill Engine Centre,
McGill University
3450 University St. Room 5
Montreal, QC H3A 0E5

McGill | Faculty of Engineering

INNOVATION FELLOWSHIP

THE DIPIERRO INNOVATION FELLOWSHIP

The McGill Engine Innovation Fellowships Program supports the recipient and the team on the development of a technology in order to bring it closer to the marketplace and allow the DiPierro Innovation Fellow to gain further knowledge and experience in business and technology commercialization. The proposal along with a pitch presentation was reviewed by an external committee comprised of three alumni from industry.

THE 2019-2020 REVIEW COMMITTEE

Doug Farnell, (BEng'76 in Mechanical Engineering McGill, MBA 88 Concordia), currently retired, is the co founder and past president of Farnell Thompsen Applied Technologies Inc- a design and supply company that has been involved in most of the world's largest Mining projects. The company specializes in large gear and gearless driven grinding mills. Doug and his business partner Steve Thompson were recently awarded the Canadian Mineral Processors Art MacPherson Award for their contributions to the industry in the field of communition.

Nathan Stubina (BEng'80, Meng'82 in Metallurgical Engineering McGill, PhD University of Toronto) joined Sherritt International as vice president of technologies in November 2018. Prior to that, he was managing director of innovation for McEwen Mining. With 30 years of international industrial experience, he also worked at various major mining companies including Barrick Gold Corp., Noranda Inc.

Michael Winship, (BEng'79 in Mining Engineering McGill) is a mining executive and director with extensive experience in corporate, operations and development. He is a team builder in diverse cultures gained from work in Canadian north, Australia, Papua New Guinea, United States, Indonesia, South America and Europe. He is recognized as an inspiring leader of change with a history of dramatic contributions to business results.

2019-2020 DIPIERRO INNOVATION FELLOWSHIP WINNER

Dr. Hamed Rafezi (post-doc) and Professor Ferri Hassani

Project Title
Drill bit condition monitoring system for mining applications

Summary
The proposed application aims to further develop our patent-pending technology for tricone drill Bit Condition Monitoring System (BCMS) in surface mining. The mining industry is moving toward automation and autonomous machinery for increasing the efficiency, precision and safety in production. Bit wear and subsequent failure of drill in the hole create major delays in removing the detached cone(s) from the hole to avoid damage to the rock crusher equipment. A successful automated blasthole drilling condition monitoring and control system is a vital step forward. Fully autonomous drilling will be achievable with our technology for recognizing when the drill bit is worn and requires replacing.

THE WILLIAM AND RHEA SEATH AWARDS SUPPORT INNOVATIVE RESEARCH AT THE FACULTY OF ENGINEERING. THEY WERE MADE POSSIBLE THROUGH THE GENEROSITY OF ALUMNUS, THE LATE WILLIAM SEATH, (BENG'52). THE AWARDS RECOGNIZE OUTSTANDING WORK BY ENGINEERING, ARCHITECTURE AND URBAN PLANNING STUDENTS AND PROFESSORS WHO CONDUCT INNOVATIVE RESEARCH WITH POTENTIAL FOR COMMERCIALIZATION.

2019-2020 WILLIAM & RHEA SEATH AWARDS REVIEW COMMITTEE

Neal Gordon, (BEng'83 in Chemical Engineering McGill, PhD MIT), is currently managing director at BDO. Previously he was chief development officer at Cobalt Biomedicine a life-science start-up founded by Flagship Venture Labs. Neal is a serial entrepreneur in the life sciences with product development and operating roles across research tools, therapeutics and diagnostics. He is a hands-on leader with a strong record of technology innovation and translation of platform technology into products.

Professor Gordon Roberts.
Professor Roberts received the B.A.Sc. degree from the University of Waterloo, Canada, in 1983 and the M.A.Sc. and Ph.D. degrees from the University of Toronto, Canada, in 1986 and 1989, respectively, all in electrical engineering. At McGill University, he is a full professor and holds the James McGill Chair in Electrical and Computer Engineering. He has co-written seven textbooks related to analog IC design and mixed-signal test. He has published numerous papers in scientific journals and conferences, and he has contributed chapters to various industrially focused textbooks. Dr. Roberts is named on 14 patents, with four pending, and has received numerous department, faculty and university awards for teaching test and electronics to undergraduates, and received several IEEE awards for his work on mixed-signal testing. In 2003 he took leave from McGill to start DFT Microsystems, Inc, a company specializing in high-speed timing measurement. Dr. Roberts is a Fellow of the IEEE.

Colin Sanctuary, (B.Eng.'97 in Mining and Materials Engineering McGill, PhD EPFL), Colin has worked in product development and later in global marketing in the medical device and pharmaceutical industries. In 2009, he co-founded QGel at the EPFL Innovation Park. Colin's aim at QGel's CEO is to build a company to contribute to improving R&D productivity in the pharmaceutical industry, in particular in the area of developing novel anti-cancer treatments.

Mitchell Wasserman, (BEng'84 in Electrical and Computer Engineering McGill, CPA McGill), is currently COO of Sportlogiq the world's sports analytics leader and McGill spin-off company. He is a seasoned entrepreneur with over 30 years of leadership experience, having founded, led and advised multiple technology companies across diverse verticals including Retail Petroleum, Global Logistics, Commercial Insurance and Gambling.

Praveen Prasanna, (BEng'96 and MEng'98 in Chemical Engineering McGill, PhD Tufts) is a global leader with a track record of successfully leading cross functional (multi-site) teams in business-critical initiatives. He has extensive experience in managing and effectively working with development (CDMO), manufacturing (CMO), distribution, and testing partners worldwide to ensure an uninterrupted supply chain. He draws from a deep knowledge of current approaches to process development and process validation, including application of QbD, DOE, FMEA, and risk analysis to ensure robust manufacturing processes.

2019-2020 WILLIAM & RHEA SEATH AWARD IN ENGINEERING INNOVATION WINNERS

Professor Amine Kamen
(Bioengineering)

Project Title
Advanced Process for Scalable Production of Viral Vectors for Gene and Cell Therapy

Summary
Preclinical experiments as well as clinical trials require large quantities of high-quality viral vectors. Our team is improving upon the production and supply of adeno-associated virus and lentivirus vectors in order to support R&D and preclinical studies in cell and gene therapy.

Professor Pascal Hubert
(Mechanical Engineering)

Project Title
Development of an Innovative Composite Prepreg Recycling System

Summary
Carbon fibre prepregs are the most widely used raw material for making high-performance composite structures. Manufacturing practices, however, generate large amounts of prepreg waste, which pose both a financial burden on the manufacturer and a negative environmental impact. Our team is deploying a commercially viable recycling tool that transforms prepreg waste collected directly from an aerospace manufacturer into a high-performance compression molding compound.

2020 ISSUED PATENTS

TITLE	PATENT	INVENTORS
Bone Replacement Implants with Mechanically Biocompatible Cellular Material	US 10,799,363 EP 3501458	Damiano Pasini, Sajad Arabnejad Khanoki, Michael Tanzer
Implant Formed of Structural Porous Biomaterial & Method for Manufacturing the Same	EP 3137125	Damiano Pasini, Michael Tanzer, Sajad Arabnejad Khanoki, Burnett Johnston
Bistable Auxetics	US 10,767,032	Damiano Pasini, Ahmad Rafsanjani Abbasi
Graphene-Based Sensor and Method of Fabricating Same	US 10,739,303	Thomas Szkopek & Ibrahim Fakih
Photodetector for Detecting Incoming Infrared Light	US 10,700,233	Monireh Fard, Christopher Williams, Glenn Cowan, Odile Liboiron-Ladouceur
Heating Mechanism for DNA Amplification, Extraction or Sterilization using Photo-Thermal Nanoparticles	US 10,604,798	Philip Roche, Andrew Kirk, Lenore Beitel, Miltiadis Paliouras, Mark Trifiro, Vamsy Chodavarapu, Mohamed Najih, Joachim Thiemann
Flexible Polar Encoders and Decoders	US 10,567,010	Warren Gross, Gabi Sarkis, Pascal Giard
High Efficiency Visible and Ultraviolet Nanowire Emitters	US 10,553,751	Zetian Mi, Songrui Zhao, Renjie Wang
Borate-Glass Biomaterials	EP 3151873 US 10,507,263	Showan Nazhat and William Lepry
Methods and Systems for Foam Mine Fill	AU2015252777	Ferri Hassani, Mohammed Hefni, Mehrdad Kermani, Dan Vatne

NATURAL SCIENCES & ENGINEERING RESEARCH COUNCIL OF CANADL\ (NSERC) GRANT

IDEA TO INNOVATION GRANT

The objective of the NSERC Idea to Innovation (I2I) Grants Program is to accelerate the pre-competitive development of promising technologies originating from colleges and universities and promote their transfer to new or established Canadian companies. These highly competitive I 2 I Grants provide funding to college and university faculty members to support R&D projects with recognized technology transfer potential and are co-written with the technology transfer managers.

Professor Showan Nazhat, with co-researcher Faleh Tamimi
Bioactive glasses for the treatment of dentin hypersensitivity

Award Summary
Dentin Hypersensitivity ("tooth sensitivity") is a common clinical condition that results in sharp pain and affects about half the adult population. The main cause is due to enamel loss, either through to periodontal disease (e.g., gingivitis) or through diet (e.g., acidic foods and drinks), which exposes the underlying dentin layer and cannot be repaired by the body. Current treatment methods either mask the underlying problem through desensitizing the root nerves or require long treatment times to form a protected layer on the dentin surface. .We have invented a novel platform technology, in the form of a bioactive glass, that can rapidly convert to bone-like mineral (e.g., enamel) at a rate of over 25 times faster than the current, commercially used bioactive glasses. This rapid conversion time will potentially translate into rapid hypersensitivity relief for the patient. In this project, we propose to advance this technology as a commercially viable product by examining the scalability of the processing as well as develop a prototype dental paste incorporating our bioactive glass for use in in-office treatment of sensitivity. We will work in collaboration with the Xerox Research Center of Canada with extensive expertise in bringing laboratory scale materials to a commercial scale. Additionally, we will develop and test the paste. Completion of these goals will create a product that can rapidly relieve tooth sensitivity. Our ultimate aim is to establish a Canadian start-up company as a bioactive glass manufacturer that will be used in a number of biomedical applications, including the dental field and will directly improve the quality of Canadian lives.

TECHACCELR GRANTEES

TECHACCELR

TechAccelR Grants grants are intended to help professors in the Faculty of Engineering accelerate their research-based ideas that are reported as inventions but need further validation prior to commercialization. These grants come out of the Faculty of Engineering Innovation Fund, which is funded by charitable gifts from alumni and other community donors. They are available throughout the year and can go up to $7,500 per project. Applications are reviewed every two to four weeks by members of the Innovation Committee, comprised of alumni of McGill's Faculty of Engineering who are entrepreneurs, investors, business, financial, scientific, and technology professionals and are selected based on their expertise in assessing early-stage technologies and building early-stage ventures.

Professor Corinne Hoesli (Chemical Engineering), Omar Bashth, Master's student (Chem.Eng.), and Mohamed Elkhodiry, PhD candidate (Chem.Eng.)

Project Title
One-Step Cell Isolation and Expansion on Multi-Functional Microcarriers

Summary
Emerging cell-based therapies for cancer, diabetes and other diseases have been hailed as the next revolution in medicine. The high cost-of-goods of these therapies is prohibitive for publicly funded health care systems such as Canada's. We propose to develop a technology for cell separation and expansion in bioreactors that could reduce costs by reducing the number of steps required during bioprocessing.

Professor Sidney Omelon (Mining and Materials Engineering)

Project Title
Recycling Phosphorus by Upgrading Municipal Biosolids

Summary
We are approaching peak phosphorus (P). Similar to oil, P-fertilizer is extracted from a non-renewable resource called “phosphate rock” (PR) that is concentrated in few geographical locations. Due to PR value and future outlook, Europe recently placed PR on its critical materials list. Germany and Switzerland have mandated future P-recovery from municipal wastewater treatment plants. Canada has no operating PR mines, and no P-recovery strategy. The only P-fertilizer production facility in Canada will soon close. We are addressing this challenge of an impending PR, and therefore P-fertilizer availability problem

TECHACCEL GRANTEES

TECHACCEL

The TechAccel Grants help students jump-start their technologically based ideas that have business potential and social impact. Teams develop their entrepreneurial skills through an online training platform, one-on-one business mentorship and project funding for product, process, or service development. These grants come out of the Faculty of Engineering Innovation Fund, which is funded by charitable gifts from alumni and other community donors.

7 Square

Hisham Hawara (Computer Software Engineering)
Aakarsh Shekhar (Software Engineering)

Acrylic

Benjamin Lusterio-Adler (Mechanical Engineering)
Celeste Nantel (Mechanical Engineering)
Chloë Ryan (Mechanical Engineering

Affluencial

William Zhang (Software Engineering)
Kelvin Jin-Yang ()

Afrobeats Central

Olisaemeka Okonkwo (Electrical and Computer Engineering)
Uzuazo Akalamudo (Electrical Engineering)
Chikezie Ariahu (Electrical and Computer Engineering)

Ameko

Adalric Leung (Mechanical Engineering)
John Pan (Mechanical Engineering)
Chun K. Li (Mechanical Engineering)
Karim Zeidan (Mechanical Engineering)
Rayan Saade (Bioengineering, Masters)

Buzzle

Massiva Mahamli (Electrical and Computer Engineering)
Alya Gabsi (Management)
Anahita Mohapatra (Computer Science)

Copysmith

Cheng Lin (Electrical Engineering)
Jasmine Wang (Computer Science & Philosophy)

Cookiestruct

Jiayuan Wang (B. Eng. Mechanical Engineering, Minor in Technological Entrepreneurship)
Felix Montgrain

Curbside

Haihan Chen (Software Engineering)
Alex Choi (Computer Software Engineering)
Kamy Moussavi (Software Engineering
Lea Kassab (Electrical Engineering)
Vasily Piccone (Electrical Engineering)

Hydrolux

Julien Brunet (Mechanical Engineering)
Friedrich Dehem-Lemelin (Mechanical Engineering)
Nicolas Dion

L'escrime Libre

Shengmiao Li (Civil Engineering)
Paul-Aymeric McRae (Physics and Computer Science)
Julien Schmidt (Computer Science, Economics and History)
Helene Ma Yang (Electrical Engineering)

LFAnt Medical

Patrick O'Neill (Biomedical and Biological Engineering)
Mark Kumhyr (Biomedical and Biological Engineering)
Adam Melnyk (Biomolecular and Cellular Engineering)
Michael Phelan (Biomedical and Biological Engineering)
Akshay Ben (Bioengineering and Biological Engineering)

Matilda

Alain Daccache (Software Engineering)
Ketan Rampurkar (Software Engineering)
Alejandra Martinez (M.Sc. Medicine)

Neat

Sarim Malik (Mechanical Engineering)
Muhammad H. Elahi (Software Engineering)
Kamal Malik (Electrical Engineering)

Sidekik

Baris Cincik (Software Engineering
Ege Yay
Egemen Bayrak
Berkehan Taner (Finance and Economics)
Usaid Barlas (Electrical Engineering)
Tushar Agarwal (Computer Engineering)

STAMP Device

Trevor Cotter (PhD Candidate, Mechanical and Biomedical Engineering)
Natasha Jacobson (PhD Candidate, Mechanical Engineering)

Stocate

Yannick D'Mello (PhD Candidate)
Ezz Abouelezz (B.Eng. Electrical and Computer Engineering)
Nathan Clairmonte (M.Eng. Electrical and Computer Engineering)
Evgenia Pateras(M.Sc. Physical and Occupational Therapy)
Chelsea Mei Lee
Kenneth Diamond
Siddiqui Hakim (M.Eng. Electrical and Computer Engineering)
Ian Sequeira

StudyBuddy

Ari Kaufman (Mechanical Engineering)
Alex Ference (Computer Science)

Ora-3D

Shlesha Van (Mechanical Engineering)
Yefei Wang (Dentistry)
Yawen Chan (Dentistry)

The Arno Project

Michael K. Mayer (Architecture)
Jonah Rappaport (Architecture)
Petro Analytis (Political Science and Government)

Tulsi.farm

Juliano Cobuzzi (Chemical Engineering)
Mehdi Ibn Brahim
Justin Dragan (Mechanical Engineering)

Alpha Iota (AI) Alloys
(Formally Mygnesium Technologies)

Luis Villegas-Armenta
(Postdoctoral Research in Materials Engineering and Data Science)
Christina Katsari
(PhD Candidate in Materials Engineering)
Konstantinos Korgiopoulos
(PhD Candidate in Materials Engineering)

ENGINE DOBSON PRIZE

ENGINE DOBSON PRIZE

The McGill Engine Prize, funded by our generous donors, the late Jim Brodeur and his wife Barbara Brodeur, is offered to support a technologically-based venture competing in the final round of the McGill Dobson Cup competition. To be eligible for the McGill Engine Prize in the McGill Dobson Cup, at least one team member must be a current full-time student or professor at McGill's Faculty of Engineering and the venture must be technologically-based. The winning team was awarded $5,000 and announced during the Dobson Cup Awards online ceremony which tookplace on July 30, 2020.

ENGINE DOBSON PRIZE WINNER

MinutesFluidics

Our mission is to provide high-quality diagnostic equipment to North American hospitals for the rapid, inexpensive, and high-throughput screening of MRSA in admitted patients. We are a team of three final year Bioengineering students:

Domenico Lopez	Alexander Bevacqua	Ali Najmaldin
U4 Bioengineering	U4 Bioengineering	U4 Bioengineering

STARTUP INTERNSHIP PROGRAM

STARTUP INTERNSHIP PROGRAM

The McGill Engine created a new initiative this summer to help provide mentorship and learning experiences for McGill students over the summer. Ten McGill Faculty of Engineering affiliated startups were selected to train and supervise an intern over the summer.

Each intern position was filled by a McGill University undergraduate student within the Faculties of Arts, Engineering, Management, Law and Science.

The interns had the opportunity to collaborate remotely with both the startup and an Engine mentor to ensure they had a well-rounded learning experience over the summer.

Thanks to our generous alumnus donor John D. Thompson and to the Government of Canada's Student Work Placement Program (SWPP)/TECHNATION Canada Career Ready Program, we have been able to create the new Startup Internship Program to provide our students with an experiential learning opportunity within our startups over this summer. The interns are listed below each startup.

Recycling Pioneers

Arneet Kalra (B.Eng. Software Engineering with a Minor in Biomedical Engineering), Software Developer

Lunavoy

Maya Hardy (B.Com. Marketing), Marketing and Sales

Afrobeats Central

Matteo Nunez (B.Eng. Software Engineering), Full Stack Developer

Stocate

Meg Heesaker (BCL & JD), Business Development & Marketing

Curbside

Jonathan Ng (B.A. Computer Science), Full Stack Developer

The Sweater Guys

Nelson Zeng (B.Eng Computer Software Engineering), Web Developer

Neat

Rahul Behal (B. Eng Chemical Engineering with a Minor in Software Engineering), Full Stack Developer

Blue City Technology

Ran Tao (B.A. Joint Honours Mathematics and Computer Science), Data Scientist

Cookiestruct

Sami Kahil (B. Eng Software Engineering), Web/Software Developer

Nia

Suhas Udupa (B. Eng Software Engineering), Software Engineering

2020 IAN McLACHLIN PRIZES FOR ENTREPRENEURSHIP IN ENGINEERING

Established in 1998 by Ian McLachlin, B.Eng. 1960 to encourage students in the Faculty of Engineering to undertake new ventures with business or social impact potential. Awarded to students enrolled in the Faculty of Engineering with high academic standing who have begun, have made progress towards, or have completed an entrepreneurial project with business or social impact potential.

Shlesha Van
(Mechanical Engineering, Undergraduate Student)
Project Title:
Ora-3D

Summary
Aiming to provide a smart and automated solution for effortless dental care by redesigning the decades old model of a toothbrush and automating it to intelligently provide a smart brushing experience.

and

Chloe Ryan and Celeste Nantel
(both Mechanical Engineering, Undergraduate Students)

Project Title:
Acrylic Design

Summary
Intends to design and sell abstract acrylic artwork that has been produced via a semi-automated process (using both robotic and software automation).

2020 CANSBRIDGE-ENGINE-EMPOWER FELLOWS

The scholarships offer three entrepreneurially-minded undergraduate students enrolled in McGill's Faculty of Engineering entry into The Cansbridge Fellowship and provide the necessary resources to live and work in Asia over the summer as well as a weeklong bootcamp and conference in San Francisco. The Cansbridge Fellowship has partnerships with top-tier Canadian universities in order to offer a unique experience to their most ambitious, high-impact students. It aims to create a community of young Canadian professionals who share a love for adventure and entrepreneurship and will become the leaders of tomorrow.

David Lin
(B.Eng. Electrical Engineering)

Adam Melnyk
(B.Eng. Biomolecular & Cellular Engineering)

Kaye Wong, Cansbridge-Empower
(B.Eng. Chemical Engineering)

THE INNOVATION FUND NEEDS YOUR SUPPORT.

The Innovation Fund lies at the heart of our Faculty's mission of encouraging entrepreneurial thinking—at all levels—through our six departments and two schools. The fund supports team-based, innovative projects through the TechAccel Grants that help students jump-start and accelerate technologically-based ideas that have business or social impact potential.

For more information contact:
Katya Marc, M.Eng, MBA, McGill Engine Associate Director
Tel: 514-398-3355 or katya.marc@mcgill.ca

The Innovation Fund is being supported by alumni:

Jim & Barbara Brodeur (BEng '56)
Ian Mclachlin (BEng'60)
Pasquale Di Pierro (BEng'76)
Fonex Data Systems Inc.
The Anna & Louis Viglione (BEng'78) Foundation
Michael Barski (BEng'68)
Mark Levine (BEng'91)
Arthur Levine (BEng'61)
Howard Stotland (BEng'66)
Robert Walsh (BEng'65)

The Innovation Fund needs your support through:

1. An annual contribution (Suggested amount is $1K)
2. A named endowment within the Innovation Fund

For more information contact:

Mr. Krish Dasgupta
Director
University Advancement Office
Faculty of Engineering
514-398-2016
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The McGill Engine, the Faculty of Engineering Innovation and Entrepreneurship Centre, focuses on stimulating technologically- based innovation and entrepreneurship at McGill in collaboration with the McGill Dobson Centre for Entrepreneurship and the Office of Innovation and Partnerships. The McGill Engine aims to help develop the next-generation of McGill technological innovators and entrepreneurs, to promote and accelerate the commercialization of inventions and software out of the Faculty, and to increase engagement and R&D collaborations between innovation-driven companies and the Faculty of Engineering.